Amendments to the Claims:

The following Listing of Claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

1-34 (canceled)

35. (new) A method for screening herbicidally active substances which inhibit the activity of plant dihydroorotase, comprising:

generating, in a first step, dihydroorotase or a protein having the enzymatic activity of a dihydroorotase, and

in a second step, measuring activity of the dihydroorotase in the presence and absence of a test substance, wherein the dihydroorotase or protein is generated from the expression of a DNA sequence having a homology of at least 80% with SEQ ID NO:1.

36. (new) The method of claim 35, wherein the dihydroorotase or protein is generated from the expression of SEQ ID NO: 1.

37. (new) The method of claim 35, wherein the dihydroorotase or protein is generated from the expression of a DNA sequence having a homology of at least 95% with SEQ ID NO: 1.

38. (new) The method as claimed in claim 35, wherein the dihydroorotase or protein is measured in a high-throughput screening assay.

39. (new) The method of claim 36, which comprises generating, in the first step, dihydroorotase using the DNA sequence of SEQ ID NO: 1.

40. (new) The method of claim 35 further comprising:

selecting the test substance which has a herbicidal activity.

41. (new) The method of claim 35 further comprising:

identifying a herbicidally active test substance which inhibits dihydroorotase.

42. (new) The method of claim 35, wherein the activity is measured in a photometric assay.

43. (new) The method of claim 42, wherein the photometric assay is measured in a photometer.

44. (new) The method of claim 42, wherein the photometric assay is read at 340 nm.

45. (new) The method of claim 35, wherein the activity is measured in a colorimetric assay.

46. (new) The method of claim 45, wherein the activity is measured by detecting formation of carbamoyl aspartate.

47. (new) An assay system based on a dihydroorotase or a protein having the enzymatic activity of a dihydroorotase, for identifying inhibitors of plant dihydroorotase, comprising:

incubating the dihydroorotase or protein with a test substance to be studied, said dihydroorotase or protein generated from the expression of a DNA sequence having a homology of at least 80% with SEQ ID NO:1, and after a suitable reaction time, determining the enzymatic activity of the protein in comparison with the activity of the protein in the absence of the test substance.

48. (new) The assay system of claim 48, wherein the dihydroorotase or the protein is generated from of SEQ ID NO: 1.

49. (new) The assay system of claim 48, wherein the dihydroorotase or the protein is generated from the expression of a DNA sequence having a homology of at least 95% with SEQ ID NO:1.

50. (new) A method for screening herbicidally active substances which inhibit the activity of plant dihydroorotase comprising:

generating a dihydroorotase or a protein having the enzymatic activity of a dihydroorotase, wherein said dihydroorotase or said protein are generated from the expression of a DNA sequence having a homology of at least 80% with SEQ ID NO:1.

measuring an activity of the dihydroorotase in the presence and absence of a test substance; and

identifying a herbicidally active test substance which inhibits the dihydroorotase, wherein the activity is measured in one of a photometric and a colorimetric assay.

51. (new) The assay system of claim 48, wherein the dihydroorotase or the protein is generated from the expression of a DNA sequence having a homology of at least 95% with SEQ ID NO:1.